

EXECUTIVE SUMMARY

This Engineering Evaluation/Cost Analysis (EE/CA) report has been developed to document procedures for the expeditious containment or treatment of the plume of groundwater contamination at Operable Unit 5 (OU 5) of Hill Air Force Base (Hill AFB). The plume is affecting groundwater beneath off-base residences in the cities of Sunset and Clinton, Utah.

The conditions at OU 5 qualify for a non-time-critical removal action for which EE/CA technical guidance applies. Non-time-critical removal actions are actions at sites for which the lead agency has determined that a removal action is required, but for which a planning period of more than six months is needed. Non-time-critical removal actions provide a mechanism for reducing the risks at OU 5 prior to completion of the remedial investigation/feasibility study process.

ES.1 Purpose of This EE/CA

A series of non-time critical removal actions are identified and evaluated for OU 5. These early actions are designed to reduce health risks and minimize the impact of the contaminant plume on off-base residents who live in Sunset and Clinton, Utah. Alternatives to be selected in the CERCLA record of decision (ROD) process may replace or incorporate the proposed removal actions described in this EE/CA. The removal actions, however, do provide a mechanism for taking early action to establish containment and begin remediation in especially sensitive portions of the site.

ES.2 Justification for an EE/CA at OU 5

In accordance with Section 300.415(b) of the National Oil and Hazardous Substances Contingency Plan (NCP), the following site-

specific factors justify performing a non-time-critical removal action:

- ▶ Potential carcinogenic risks to nearby residents from arsenic in the groundwater of as much as 3 in 1000 (Goal is less than 1 in one million) and noncarcinogenic hazard indices of as much as 30 (Goal is less than 1) (*Draft Final Baseline Risk Assessment, Operable Unit 5*, (Radian, 1994b));
- ▶ A contaminant plume of Trichloroethene (TCE) at 20 to 200 times the maximum contaminant level (MCL) that may be contributing to the risk to nearby residents; and
- ▶ Hydrological conditions that could cause the migration of contaminants and the potential exposure of additional receptors.

This EE/CA presents a series of alternatives intended to address these factors. Each of the alternatives presented can contribute to subsequent remedial actions in accordance with CERCLA Section 104(a)(2).

ES.3 EE/CA Strategy

The contaminant plume at OU 5 affects groundwater in both on-base and off-base areas. Off-base areas affected by the groundwater plume are located within the cities of Sunset and Clinton. The variable hydrogeology and number of off-base private residents which utilize the groundwater encourages identifying areas of high risk within the operable unit and then addressing each of these areas in a phased approach. This EE/CA discusses a series of phased removal actions to reduce risks, especially in the cities of

Sunset and Clinton. Table ES-1 shows the objectives, goals, strategies, actions, and constraints of the OU 5 removal actions.

ES.4 Removal Action Objectives

The objectives of the proposed removal action at OU 5 are presented in Table ES-1 are intended to protect human health and the environment through preserving or restoring environmental media. For OU 5, this is best accomplished through groundwater treatment and/or prevention of groundwater quality degradation in the OU 5 off-base area.

ES.5 Phased Implementation of Multiple Removal Actions

The local topography and density of houses in Sunset and Clinton discourage a single, large-scale approach to containment or remediation. The proposed approach instead divides the site into a series of accessible areas associated with the highest groundwater contaminant concentrations and proposes a series of distinct removal actions within each area. Implementation of these removal actions will be phased. Each removal action includes a monitoring plan and criteria for implementing future removal actions. The proposed removal actions are interrelated and the success of an early action could reduce the need for future actions.

Various portions of the operable unit have been identified and ranked in order of priority as follows for the implementation of removal actions.

- ▶ **Phase I:** The leading edge of the 1,000 ppb TCE contour which is approaching Main Street in Sunset;

- ▶ **Phase II:** The 100 to 1,000 ppb TCE portion of the site at the eastern end of 2125 North;
- ▶ **Phase III:** The downgradient portion of the 100 to 1,000 ppb TCE groundwater plume at 250 West between 2050 North and 2300 North;
- ▶ **Phase IV:** The area near the former wastewater treatment plant where TCE concentrations in the groundwater are 100 ppb and higher; and
- ▶ **Phase V:** The relatively small area of potentially occurring arsenic contamination in groundwater at Bamberger Pond.

Phase V is the only phase which addresses Bamberger Pond. Four phases (I, II, III, and IV) address contamination at the Tooele Rail Shop and are shown in Figure ES-1.

ES.6 Alternative Evaluation and Selection

The alternatives for each phase undergo an individual analysis and comparative analysis to determine the selected alternative. The alternatives selected for each phase are described below:

- ▶ **Phase I, Alternative 1:** 400 linear foot in-situ aeration curtain with vapor phase extraction, monitoring, and institutional controls (if necessary);
- ▶ **Phase II, Alternative 1:** Extraction wells, conveyance pipe to county sanitary sewer system (or treatment with a low-profile air stripper, if necessary, with discharge to storm drain), monitoring, and institutional controls (if necessary);

Table ES-1
Scope of OU 5 Removal Actions

Objectives	Goals	Strategies	Actions	Constraints
<ul style="list-style-type: none"> ▶ Reduce or eliminate releases and potential releases of contaminated groundwater flow through seeps and springs ▶ Prevent further degradation of groundwater quality ▶ Reduce further spread of contamination to currently unaffected residents ▶ Minimize the effect of the release on the welfare of residents living in Sunset and Clinton ▶ Support and complement the overall remediation strategy considered in the feasibility study 	<ul style="list-style-type: none"> ▶ Prevent groundwater contaminated with TCE at concentrations greater than 1000 ppb from reaching the Sunset residential area ▶ Reduce the aerial extent of the 100 ppb (and higher) groundwater TCE plume ▶ Resolve lingering questions surrounding arsenic levels at Bamberger Pond and implement early measures to contain any existing groundwater contamination ▶ Reduce contaminant concentrations in the vicinity of the former wastewater treatment plant 	<ul style="list-style-type: none"> ▶ Utilize a phased approach to implement a series of removal actions ▶ Establish containment immediately upgradient from Sunset ▶ Divide the residential area into sectors and implement a series of phased removal actions to lower local groundwater concentrations and establish plume containment ▶ When possible, lower the water table to reduce the likelihood of exposure to contaminated water seepage ▶ Establish containment of the smaller northern source of contamination 	<ul style="list-style-type: none"> ▶ Install a pump and treat system to establish hydraulic containment ▶ Install in situ treatment systems designed to intercept contaminant migration paths ▶ Monitor each removal action to optimize performance and evaluate the need for future actions 	<ul style="list-style-type: none"> ▶ Limited characterization of the aquifer (i.e., pumping test data) in the Sunset area produces uncertainty in the analyses of removal alternatives ▶ Availability of funding ▶ Results of treatability study to evaluate in-situ option are still pending ▶ Interaction of upgradient actions on the western, downgradient portion of the plume are uncertain without complex modelling ▶ Limited capacity of Sunset storm sewer system or other alternatives to accept discharge of treated water in off-base area.

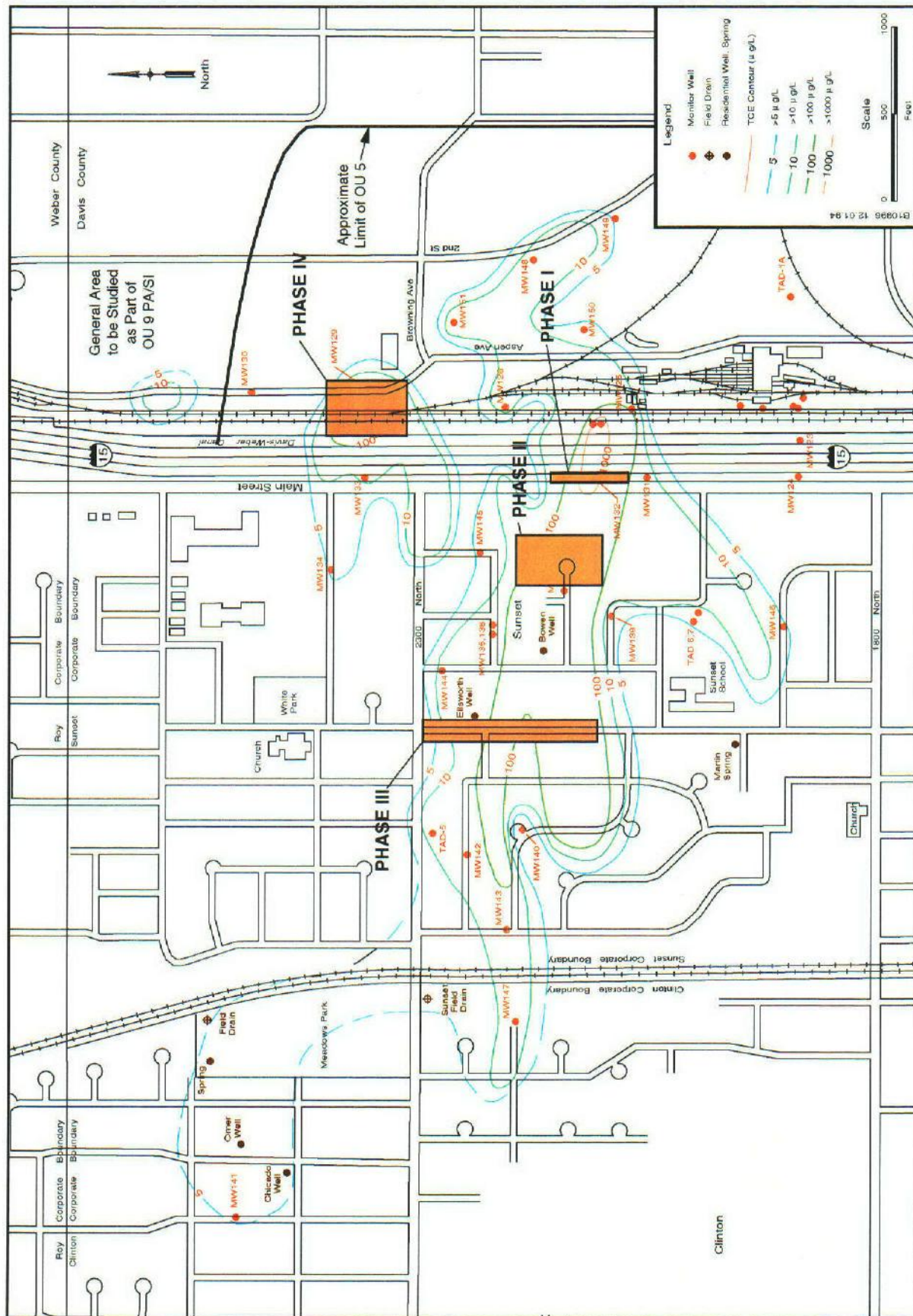


Figure ES-1. Phased Removal Actions for Tooele Army Rail Shop

- **Phase III, Alternative:** Extraction trench, discharge to county sanitary sewer (or treatment with a low-profile air stripper, if necessary, with discharge to storm drain), monitoring, and institutional controls (if necessary);
- **Phase IV, Alternative:** Extraction wells, conveyance pipe to Base sanitary sewer system (or treatment with a low-profile air stripper, if necessary, with discharge to an infiltration gallery), monitoring, and institutional controls (if necessary); and
- **Phase V, Alternative 2:** Drain Bamberger pond, excavate pond sediment, solidify sediment at bottom of pond, install clay liner, return pond to service, monitoring, and institutional controls (if necessary).

develop a *Responsiveness Summary* addressing the public concerns. A *Record of Decision* (ROD) will then be issued identifying the final remedial alternative(s) adopted for the site on the basis of a consensus agreement between Hill AFB, U.S. EPA, and the Utah Department of Environmental Quality (UDEQ). The ROD will identify actions to be implemented for addressing all contaminated media associated with OU 5, including contaminated soils, groundwater, and surface water.

ES.7 Implementation of EE/CA Alternatives

On the basis of the comparative analysis performed, alternatives for each of the phases have been selected for implementation.

In accordance with Section 300.415(c) of the NCP, the removal actions presented in this EE/CA are intended to complement the remedial action alternatives presented in the forthcoming feasibility study. Alternatives for addressing the contamination at OU 5 will be developed and evaluated in the feasibility study report. The removal actions developed in this EE/CA will also be technically consistent with those developed in the feasibility study. A *Proposed Plan* will be developed by Hill AFB and publicly distributed following completion of the feasibility study. The public will be provided with a reasonable opportunity to review and comment on the proposed plan, and participate in a public meeting. Following public input, Hill AFB will